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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/034,480	12/20/2001	Kazuo Hirose	WAKI-203	2161
24972	7590	10/12/2004	EXAMINER	
FULBRIGHT & JAWORSKI, LLP 666 FIFTH AVE NEW YORK, NY 10103-3198			LAVARIAS, ARNEL C	
			ART UNIT	PAPER NUMBER
			2872	

DATE MAILED: 10/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/034,480

Applicant(s)

HIROSE ET AL.

Examiner

Arnel C. Lavarias

Art Unit

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 July 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3-10,21 and 22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-10,21 and 22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Amendment***

1. The amendments to Claims 1 and 10 in the submission dated 7/29/04 are acknowledged and accepted. In view of these amendments, the objections to Claim 1 in Section 8 of the Office Action dated 4/7/04 are respectfully withdrawn.
2. The cancellation of Claims 11 and 16 in the submission dated 7/29/04 is acknowledged and accepted. In view of these amendments, the objections and rejections of Claims 11 and 16 in Sections 8, 10, 15-16 of the Office Action dated 4/7/04 are respectfully withdrawn.
3. The addition of Claims 21-22 in the submission dated 7/29/04 is acknowledged and accepted.

### ***Response to Arguments***

4. The Applicants' arguments, see in particular the remarks regarding not generating a weld line on Pages 5-6 of the submission, filed 7/29/04, with respect to the rejection(s) of Claim(s) 1 and 10 under 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of prior art to Nakamura et al. (U.S. Patent No. 5830940).
5. Claims 1, 3-10, 21-22 are rejected as follows.

***Claim Objections***

6. Claims 1, 3-10, 21-22 are objected to because of the following informalities:

Claims 1, 10, 21 and 22 all recite the limitation "the core pin" in line 8 of Claim 1, line 6 of Claim 10, line 8 of Claim 21, and line 6 of Claim 22. There is insufficient antecedent basis for this limitation in the claims. Claims 3-10 are dependent on Claim 1, and hence inherit the deficiencies of Claim 1.

Claim 10 recites the limitation "the cavity" in lines 6 and 7. There is insufficient antecedent basis for this limitation in the claim.

Claim 21, line 11- 'contact' should read 'contacting'

Claim 22, line 9- 'contact' should read 'contacting'

Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1, 3-4, 10, 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikegame et al. (U.S. Patent No. 6229778, of Ikegame '778), of record, in view of Hayakawa et al. (JP06027360A), of record, Shoji et al. (U.S. Patent No. 4785434), of record, and Nakamura et al. (U.S. Patent No. 5830940).

Ikegame '778 discloses an optical pick-up (See Figures 2, 3, 9, 10) comprising a support shaft (See 12 in Figure 10), and an lens holder (See 6 in Figure 10) having a bearing part (See the bore of 6 which is engaged with shaft 12 in Figure 10) which fits on the supporting shaft rotatably, wherein the lens holder is a resin molded product (See col. 8, lines 7-17) comprising a lens supporting part (See 6a in Figure 10) having a lens receiving surface (See surface on which element 21 rests in Figure 10), and the bearing part having a bearing surface disposed vertically to the lens receiving surface (See surface on which element 21 rests and the bore of 6 which is engaged with shaft 12 in Figure 10). Additionally, Ikegame '778 discloses the optical pick-up having a plurality of lens receiving surfaces disposed on it (see 4, 5, in Figures 2, 3) and the resin molded product being a liquid crystal resin composition (See col. 8, lines 7-17). Ikegame '778 lacks the resin molded product being injection molded and comprising a gate at an end of the bearing part disposed at an opposite side of the lens receiving surface and disposed parallel to an inside perimeter of the bearing part and disposed at around a tip of a core pin and at a perimeter of the bearing part; the gate being disposed between a cavity in a fixed template of an injection mold and a core pin for a bearing hole, the core pin being held in the cavity in the fixed template unconstrained and the tip of the core pin not contacting any parts in the cavity, and the bearing part having no weld line. However, Hayakawa et al. teaches a method of producing a lens holder for an optical pick-up using an injection molding technique (See Figures 1, 2, 4) wherein the resin is injected into a die through a gate (See 10 in Figures 1, 2, 4; Abstract) such that the gate is disposed parallel to the inside perimeter of the bearing part (See 4 in Figures 1, 2, 4). Hayakawa et

al. additionally teaches that the position of the gate may also be moved to the circumference of the lens holder, as shown in Figures 3, 6, and 7. One skilled in the art would realize that the gate may be positioned anywhere on the surface of the lens holder, such as at an end of the bearing part disposed at an opposite side of the lens receiving surface (See recess next to 3 in Figures 1, 2, 4) or i.e. the gates 10 are located on the opposite side of where they are located in Figures 1, 2, 4, so long as the molten resin is injected to fill the entire mold or die to form the lens holder. The combined teachings of Ikegame '778 and Hayakawa et al. lack the gate being disposed at around a tip of a core pin and at a perimeter of the bearing part, and further being disposed between a cavity in a fixed template of an injection mold and a core pin for a bearing hole, the core pin being held in the cavity in the fixed template unconstrained and the tip of the core pin not contacting any parts in the cavity; and the bearing part having no weld line. However, Shoji et al. teaches a process for injection molding of a synthetic resin shaft and gear (See Abstract; Figures 5, 12), wherein the mold (See 23 in Figure 12A) for forming the desired part includes an upper half (See upper mold portion 23 of Figure 12A) and a lower half (See lower mold portion 23 of Figure 12A). Gates (See G in Figure 12A) are disposed adjacent the tip of a core pin and at a perimeter of the bearing part, and further between a cavity (See cavity portion between mold portions 23 in Figure 12A) in a fixed template of an injection mold and a core pin (See central pin extension from lower mold portion 23 in Figure 12A) for a bearing hole, the core pin being held in the cavity in the fixed template unconstrained (See free end of central pin extension from lower mold portion near gates G in Figure 12A; it is noted that this free end is not fixedly connected to the upper mold

portion, and hence is unconstrained at least in the lateral direction) and the tip of the core pin not contacting any parts in the cavity (it is noted that the horizontal flat top of the core pin between the gates in Figure 12A is only in contact with an upper portion of metal mold 23, this portion of the mold not being located in the cavity). The combined teachings of Ikegame '778, Hayakawa et al., and Shoji et al. lack the bearing part having no weld line. However, Nakamura et al. provides general teachings of producing a shaped article, such as an optical pick-up device (See Abstract; col. 2, line 41-col. 3, line 25) made of liquid crystalline polymer, wherein weld lines in the shaped article may be avoided by use of a single gate, instead of multiple gates, to avoid weld lines (i.e. lines of structural weakness caused by multiple melted resin flows encountering each other in the mold) (See col. 2, lines 22-38; col. 13, lines 48-65). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the resin molded product comprise further include the gate being disposed at around a tip of a core pin and at a perimeter of the bearing part, and further being disposed between a cavity in a fixed template of an injection mold and a core pin for a bearing hole, the core pin being held in the cavity in the fixed template unconstrained and the tip of the core pin not contacting any parts in the cavity; and the bearing part having no weld line, as taught by Hayakawa et al., Shoji et al., and Nakamura et al., in the optical pick-up of Ikegame '778 for the purpose of 1) improving dimensional accuracy of the bearing part as well as increasing the mechanical rigidity of the lens holder; 2) providing increased mechanical strength since the resin orients itself in the flowing direction (See col. 8, line 60-col. 9,

line 36 of Shoji et al.); and 3) preventing reduction in structural strength of the bearing part which could cause failure during operation.

9. Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikegame '778 in view of Hayakawa et al., Shoji et al., and Nakamura et al. as applied to Claims 1 and 4 above, and further in view of either Tachikawa et al. (U.S. Patent No. 6375863), of record, or Makabe et al. (U.S. Patent No. 6153121), of record.

Ikegame '778 in view of Hayakawa et al., Shoji et al., and Nakamura et al. disclose the invention as set forth above in Claims 1 and 4 above, except for the resin molded product comprising at least one of a fibrous filler and a flake filler, and having flexural elastic modulus of 10 GPa or more. However, both Tachikawa et al. and Makabe et al. teach the use of resins, such as liquid crystal polymer resin, for producing precision moldings, such as of optical pick-ups. In particular, Tachikawa et al. teaches the use of liquid crystal polymer resins for molding optical pick-ups (See col. 20, line 23-col. 21, line 15) in which fillers and fibers have been incorporated to increase the mechanical strength and other characteristic properties. For example, fillers, such as mica, talc, glass fibers, or carbon fibers, are added to the liquid crystal polymer resin composition to increase the elastic modulus and shield electromagnetic waves (See col. 13, line 40-col. 18, line 25). Makabe et al. teaches the use of liquid crystal resins for molding optical pick-ups (See Claims 1, 17; col. 15, line 24-col. 16, line 6) in which fillers and fibers, such as mica, talc, glass fibers, and carbon fibers, have been incorporated to provide good mechanical properties (See col. 10, lines 14-26). Additionally, the amount of such fibrous and flake fillers into the liquid crystal polymer resin is adjusted to achieve a



particular elastic modulus, such as 10 GPa or higher (See Claims 1, 20; col. 18, lines 13-20; Table 1). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the resin molded product comprise at least one of a fibrous filler and a flake filler, and have flexural elastic modulus of 10 GPa or more, as taught by either Tachikawa et al. or Makabe et al., in the optical pick-up of Ikegame '778 in view of Hayakawa et al., Shoji et al., and Nakamura et al., for the purpose of adjusting the various properties, such as mechanical and electrical properties, of the final lens holder product based on the intended requirements.

10. Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikegame '778 in view of Hayakawa et al., Shoji et al., and Nakamura et al. as applied to Claim 1 above, and further in view of Hirose et al. (U.S. Patent No. 6108143), of record.

Ikegame '778 in view of Hayakawa et al., Shoji et al., and Nakamura et al. disclose the invention as set forth above in Claim 1, except for the supporting shaft being formed of a zirconia-containing ceramic. However, Hirose et al. teaches an optical pick-up (See Figures 1, 2, 3) that is very similar to the claimed invention, wherein at least one of the supporting shaft (See 2 in Figures 1, 2, 3) and the bearing part (See 5, 10 in Figures 1, 2, 3) of the optical pick-up is formed of ceramics containing zirconia (See Abstract). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the supporting shaft be formed of a zirconia-containing ceramic, as taught by Hirose et al., in the optical pick-up of Ikegame '778 in view of Hayakawa et al. and Shoji et al., for the purpose of increasing the dimension accuracy of

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the supporting shaft, thus allowing for higher accuracy positioning of the optical pick-up beam.

*Conclusion*

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnel C. Lavarias whose telephone number is 571-272-2315. The examiner can normally be reached on M-F 8:30 AM - 5 PM EST.

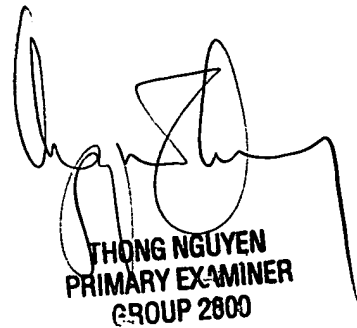
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Arnel C. Lavarias  
10/6/04



THONG NGUYEN  
PRIMARY EXAMINER  
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